

FIGURE 1

Murine Antibody 3B9 Light Chain
Native Signal Sequence and Variable RegionNucleotide Sequence SEQ ID NO:1
Amino Acid Sequence SEQ ID NO:2

ATG GAG ACA GAC ACA ATC CTG CTA TGG GTG CTG CTG CTC 39
 Met Glu Thr Asp Thr Ile Leu Leu Trp Val Leu Leu Leu
 1 5 10

TGG GTT CCA GGC TCC ACT GGT GAC ATT GTG CTG ACC CAA 78
 Trp Val Pro Gly Ser Thr Gly Asp Ile Val Leu Thr Gln
 15 20 25

TCT CCA GCT TCT TTG GCT GTG TCT CTA GGG CAG AGG GCC 117
 Ser Pro Ala Ser Leu Ala Val Ser Leu Gly Gln Arg Ala
 30 35

ACC ATC TCC TGC AAG GCC AGC CAA AGT GTT GAT TAT GAT 156
 Thr Ile Ser Cys Lys Ala Ser Gln Ser Val Asp Tyr Asp
 40 45 50

GGT GAT AGT TAT ATG AAC TGG TAC CAA CAG AAA CCA GGA 195
Gly Asp Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro Gly
 55 60 65

CAG CCA CCC AAA CTC CTC ATC TAT GCT GCA TCC AAT CTA 234
 Gln Pro Pro Lys Leu Leu Ile Tyr Ala Ala Ser Asn Leu
 70 75

GAA TCT GGG ATC CCA GCC AGG TTT AGT GGC AGT GGG TCT 273
Glu Ser Gly Ile Pro Ala Arg Phe Ser Gly Ser Gly Ser
 80 85 90

GGG ACA GAC TTC ACC CTC AAC ATC CAT CCT GTG GAG GAG 312
 Gly Thr Asp Phe Thr Leu Asn Ile His Pro Val Glu Glu
 95 100

GAG GAT GCT GCA ACC TAT TAC TGT CAG CAA AGT AAT GAG 351
 Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Ser Asn Glu
 105 110 115

GAT CCT CCG ACG TTC GGT GGA GGC ACC AAG CTG GAA ATC 390
Asp Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
 120 125 130

AAA CGG
 Lys Arg 396

Figure 2

Murine Antibody 3B9 Heavy Chain
 Native Signal Sequence and Variable Region

Nucleotide Sequence SEQ ID NO: 3
 Amino Acid Sequence SEQ ID NO: 4

GAATTCTGGCGG CCGCTATGCA GGGACAATCA GCAGCAGCAA	40
TGAGGAAGTA AGCCTGTGCA GAT ATG AAC AGG CTT ACT TCC	81
Met Asn Arg Leu Thr Ser	
1 5	
TCA TTG CTG CTG CTG ATT GTC CCT GCA TAT GTC CTG TCC	120
Ser Leu Leu Leu Leu Ile Val Pro Ala Tyr Val Leu Ser	
10 15	
CAG GTT ACT CTG AAA GAG TCT GGC CCT GGG ATA TTG CAG	159
Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln	
20 25 30	
CCC TCC CAG ACC CTC AGT CTG ACT TGT TCT TTC TCT GGG	198
Pro Ser Gln Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly	
35 40 45	
TTT TCA CTG AGC ACT TCT GGT ATG GGT GTG AGC TGG ATT	237
Phe Ser Leu Ser <u>Thr Ser Gly</u> Met Gly Val Ser Trp Ile	
50 55	
CGT CAG CCT TCA GGA AAG GGT CTG GAG TGG CTG GCA CAC	276
Arg Gln Pro Ser Gly Lys Gly Leu Glu Trp Leu Ala <u>His</u>	
60 65 70	
ATT TAC TGG GAT GAT GAC AAG CGC TAT AAC CCA TCC CTG	315
<u>Ile Tyr Trp Asp Asp Lys Arg Tyr Asn Pro Ser Leu</u>	
75 80	
AAG AGC CGG CTC ACA ATC TCC AAG GAT ACC TCC AGC AAC	354
<u>Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Ser Asn</u>	
85 90 95	
CAG GTA TTC CTC AAG ATC ACC AGT GTG GAC ACT GCA GAT	393
Gln Val Phe Leu Lys Ile Thr Ser Val Asp Thr Ala Asp	
100 105 110	
ACT GCC ACA TAC TAC TGT GCT CGA AGA GAG ACT GTG TTC	432
<u>Thr Ala Thr Tyr Tyr Cys Ala Arg Arg Glu Thr Val Phe</u>	
115 120	

Figure 2 (con't)

TAC	TGG	TAC	TTC	GAT	GTC	TGG	GGC	GCA	GGG	ACC	ACG	GTC	471
<u>Tyr</u>	<u>Trp</u>	<u>Tyr</u>	<u>Phe</u>	<u>Asp</u>	<u>Val</u>	<u>Trp</u>	<u>Gly</u>	<u>Ala</u>	<u>Gly</u>	<u>Thr</u>	<u>Thr</u>	<u>Val</u>	
125						130						135	
ACC	GTC	TCC	TCA										483
Thr	Val	Ser	Ser										
													140

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FIGURE 3

Human/Murine 3B9 Chimeric Antibody Heavy Chain
Signal Sequence and Variable RegionNucleotide Sequence SEQ ID NO: 9
Amino Acid Sequence SEQ ID NO:10

ATG GTG TTG CAG ACC CAG GTC TTC ATT TCT CTG TTG CTC	39
Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu	
1 5 10	
TGG ATC TCT GGT GCC TAC GGG CAG GTT ACC CTG AAA GAG	78
Trp Ile Ser Gly Ala Tyr Gly Gln Val Thr Leu Lys Glu	
15 20 25	
TCT GGC CCT GGG ATA TTG CAG CCC TCC CAG ACC CTC AGT	117
Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln Thr Leu Ser	
30 35	
CTG ACT TGT TCT TTC TCT GGG TTT TCA CTG AGC ACT TCT	156
Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser <u>Thr Ser</u>	
40 45 50	
GGT ATG GGT GTG AGC TGG ATT CGT CAG CCT TCA GGA AAG	195
<u>Gly Met Gly Val Ser</u> Trp Ile Arg Gln Pro Ser Gly Lys	
55 60 65	
GGT CTG GAG TGG CTG GCA CAC ATT TAC TGG GAT GAT GAC	234
Gly Leu Glu Trp Leu Ala <u>His Ile Tyr Trp Asp Asp Asp</u>	
70 75	
AAG CGC TAT AAC CCA TCC CTG AAG AGC CGG CTC ACA ATC	273
<u>Lys Arg Tyr Asn Pro Ser Leu Lys Ser</u> Arg Leu Thr Ile	
80 85 90	
TCC AAG GAT ACC TCC AGC AAC CAG GTA TTC CTC AAG ATC	312
Ser Lys Asp Thr Ser Ser Asn Gln Val Phe Leu Lys Ile	
95 100	
ACC AGT GTG GAC ACT GCA GAT ACT GCC ACA TAC TAC TGT	351
Thr Ser Val Asp Thr Ala Asp Thr Ala Thr Tyr Tyr Cys	
105 110 115	
GCT CGA AGA GAG ACT GTG TTC TAC TGG TAC TTC GAT GTC	390
Ala Arg <u>Arg Glu Thr Val Phe Tyr Trp Tyr Phe Asp Val</u>	
120 125 130	
TGG GGC GCA GGG ACC ACG GTC ACC GTC TCC TCA	423
Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser	
135 140	

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FIGURE 4

Humanized 3B9 Antibody Heavy Chain
Signal Sequence and Variable RegionNucleotide Sequence SEQ ID NO: 11
Amino Acid Sequence SEQ ID NO: 12

ATG GTG TTG CAG ACC CAG GTC TTC ATT TCT CTG TTG CTC	39
Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu	
1 5 10	
TGG ATC TCT GGT GCC TAC GGG CAG GTT ACC CTG CGT GAA	78
Trp Ile Ser Gly Ala Tyr Gly Gln Val Thr Leu Arg Glu	
15 20 25	
TCC GGT CCG GCA CTA GTT AAA CCG ACC CAG ACC CTG ACG	117
Ser Gly Pro Ala Leu Val Lys Pro Thr Gln Thr Leu Thr	
30 35	
TTA ACC TGC ACC TTC TCC GGT TTC TCC CTG TCG ACC TCC	156
Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser <u>Thr Ser</u>	
40 45 50	
GGT ATG GGT GTT TCC TGG ATC CGT CAG CCG CCG GGT AAA	195
<u>Gly Met Gly Val Ser</u> Trp Ile Arg Gln Pro Pro Gly Lys	
55 60 65	
GGT CTA GAA TGG CTG GCT CAC ATC TAC TGG GAC GAC GAC	234
Gly Leu Glu Trp Leu Ala <u>His Ile Tyr Trp Asp Asp Asp</u>	
70 75	
AAA CGT TAC AAC CCG AGC CTG AAA TCC CGT CTG ACG ATA	273
<u>Lys Arg Tyr Asn Pro Ser Leu Lys Ser Arg</u> Leu Thr Ile	
80 85 90	
TCC AAA GAC ACC TCC CGT AAC CAG GTT GTT CTG ACC ATG	312
Ser Lys Asp Thr Ser Arg Asn Gln Val Val Leu Thr Met	
95 100	
ACT AAC ATG GAC CCG GTT GAC ACC GCT ACC TAC TAC TGC	351
Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr Cys	
105 110 115	
GCT CGA CGC GAA ACC GTT TTC TAC TGG TAC TTC GAC GTT	390
Ala Arg <u>Arg Glu Thr Val Phe Tyr Trp Tyr Phe Asp Val</u>	
120 125 130	
TGG GGT CGT GGT ACC CCA GTT ACC GTG AGC TCA	423
Trp Gly Arg Gly Thr Pro Val Thr Val Ser Ser	
135 140	

FIGURE 5

Humanized 3B9 Antibody Light Chain
Signal Sequence and Variable RegionNucleotide Sequence SEQ ID NO: 13
Amino Acid Sequence SEQ ID NO: 14

ATG GGA TGG AGC TGT ATC ATC CTC TTC TTG GTA GCA ACA	39
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr	
1 5 10	
GCT ACA GGT GTC CAC TCC GAT ATC GTG ATG ACC CAG TCT	78
Ala Thr Gly Val His Ser Asp Ile Val Met Thr Gln Ser	
15 20 25	
CCA GAC TCG CTA GCT GTG TCT CTG GGC GAG AGG GCC ACC	117
Pro Asp Ser Leu Ala Val Ser Leu Gly Glu Arg Ala Thr	
30 35	
ATC AAC TGC AAG GCC TCC CAA AGT GTT GAT TAT GAT GGT	156
Ile Asn Cys <u>Lys</u> Ala Ser Gln Ser Val Asp Tyr Asp Gly	
40 45 50	
GAT AGT TAT ATG AAC TGG TAT CAG CAG AAA CCC GGG CAG	195
<u>Asp Ser Tyr Met Asn</u> Trp Tyr Gln Gln Lys Pro Gly Gln	
55 60 65	
CCT CCT AAG TTG CTC ATT TAC GCT GCA TCC AAT CTA GAA	234
Pro Pro Lys Leu Leu Ile Tyr <u>Ala Ala Ser Asn Leu Glu</u>	
70 75	
TCT GGG GTA CCT GAC CGA TTC AGT GGC AGC GGG TCT GGG	273
<u>Ser Gly Val Pro Asp Arg</u> Phe Ser Gly Ser Gly Ser Gly	
80 85 90	
ACA GAT TTC ACT CTC ACC ATC AGC AGC CTG CAG GCT GAA	312
Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala Glu	
95 100	
GAT GTG GCA GTA TAC TAC TGT CAG CAA AGT AAT GAG GAT	351
Asp Val Ala Val Tyr Tyr Cys <u>Gln Gln Ser Asn Glu Asp</u>	
105 110 115	
CCT CCG AGG TTC GGC GGA GGG ACC AAG GTG GAG ATC AAA	390
<u>Pro Pro Arg Phe Gly Gly Gly</u> Thr Lys Val Glu Ile Lys	
120 125 130	
CGT	393
Arg	

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FIGURE 6A

Signal Sequence

Nucleotide SEQ ID NO:5
Amino Acid SEQ ID NO:6

ATG	GTG	TTG	CAG	ACC	CAG	GTC	TTC	ATT	TCT	CTG	TTG	CTC	39
Met	Val	Leu	Gln	Thr	Gln	Val	Phe	Ile	Ser	Leu	Leu	Leu	
1				5					10				

TGG	ATC	TCT	GGT	GCC	TAC								
Trp	Ile	Ser	Gly	Ala	Tyr								
		15											

FIGURE 6B

Signal Sequence

Nucleotide SEQ ID NO:7
Amino Acid SEQ ID NO:8

ATG	GGA	TGG	AGC	TGT	ATC	ATC	CTC	TTC	TTG	GTA	GCA	ACA	39
Met	Gly	Trp	Ser	Cys	Ile	Ile	Leu	Phe	Leu	Val	Ala	Thr	
1				5					10				

GCT	ACA	GGT	GTC	CAC	TCC	GAT	ATC	GTG	ATG	ACC	CAG	TCT	78
Ala	Thr	Gly	Val	His	Ser	Asp							
			15			20							

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FIGURE 7

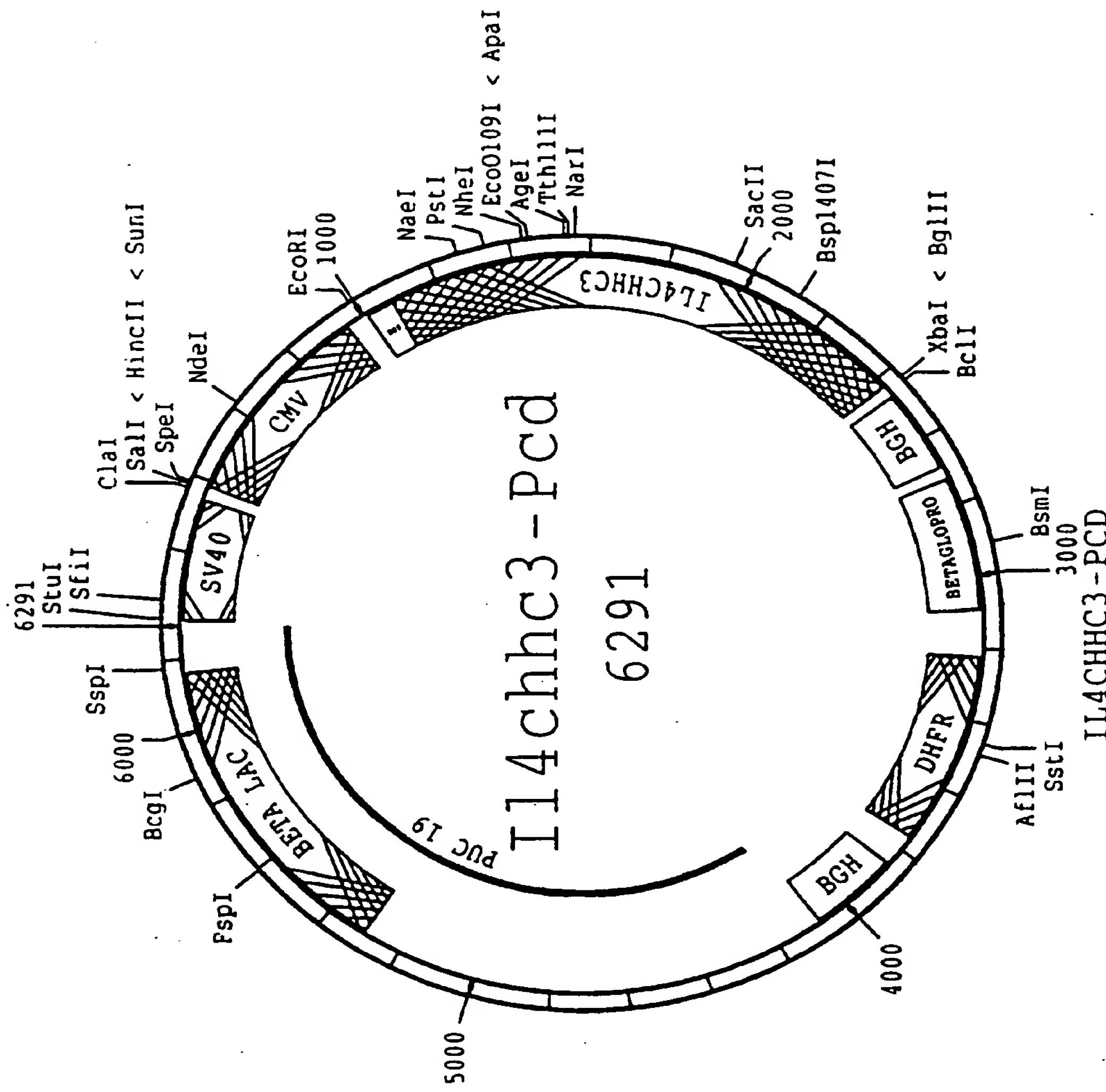
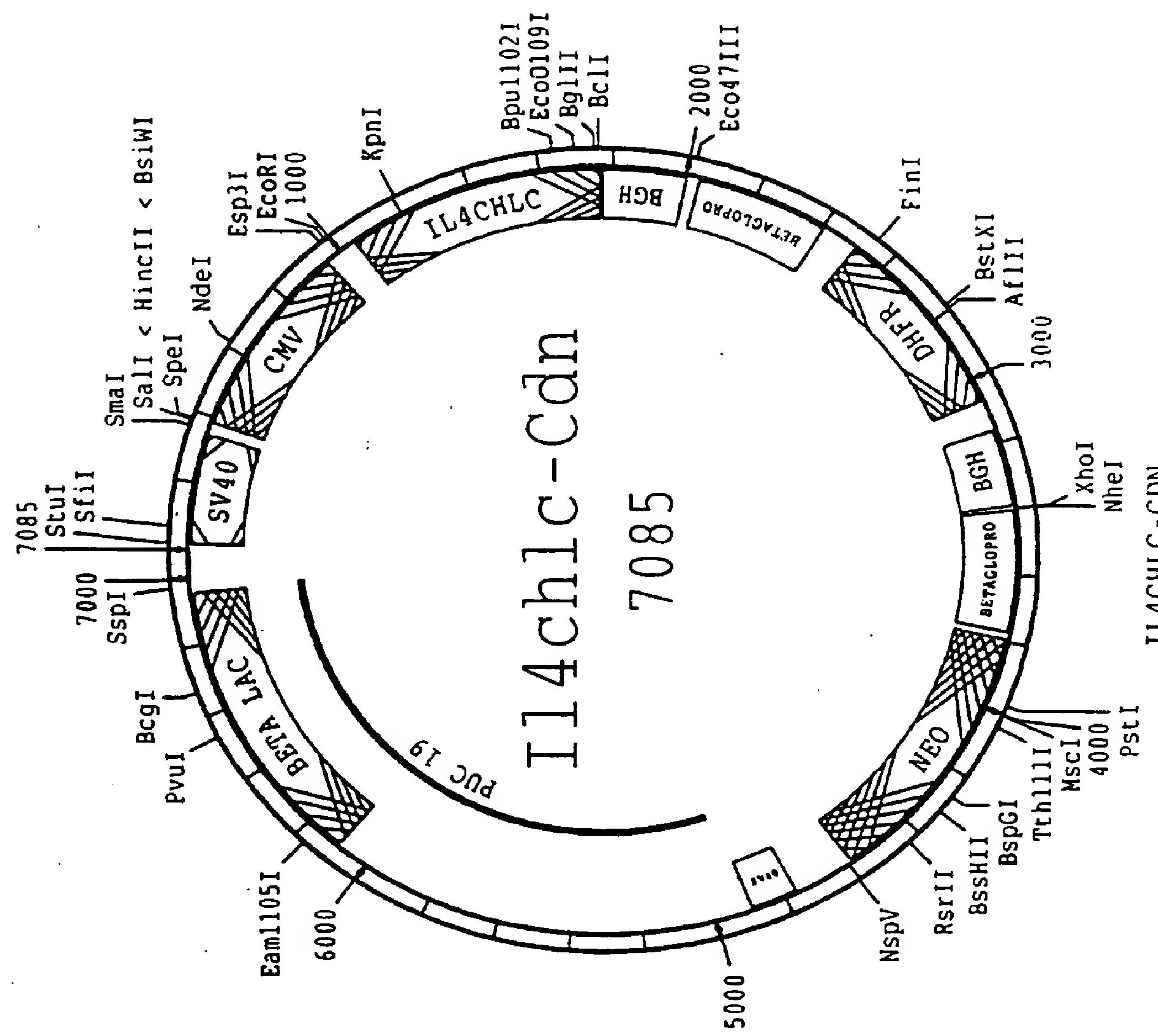


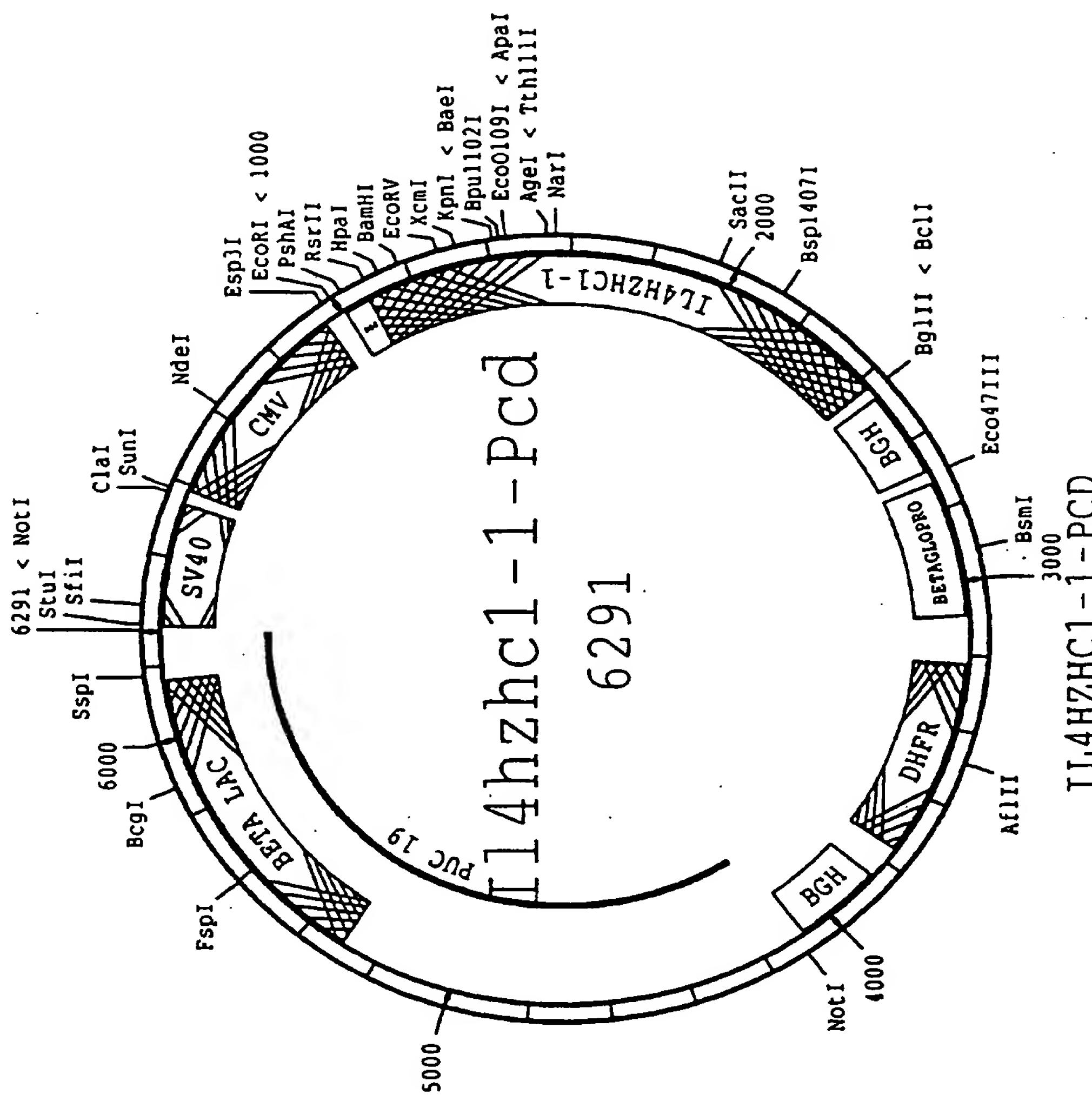
FIGURE 8



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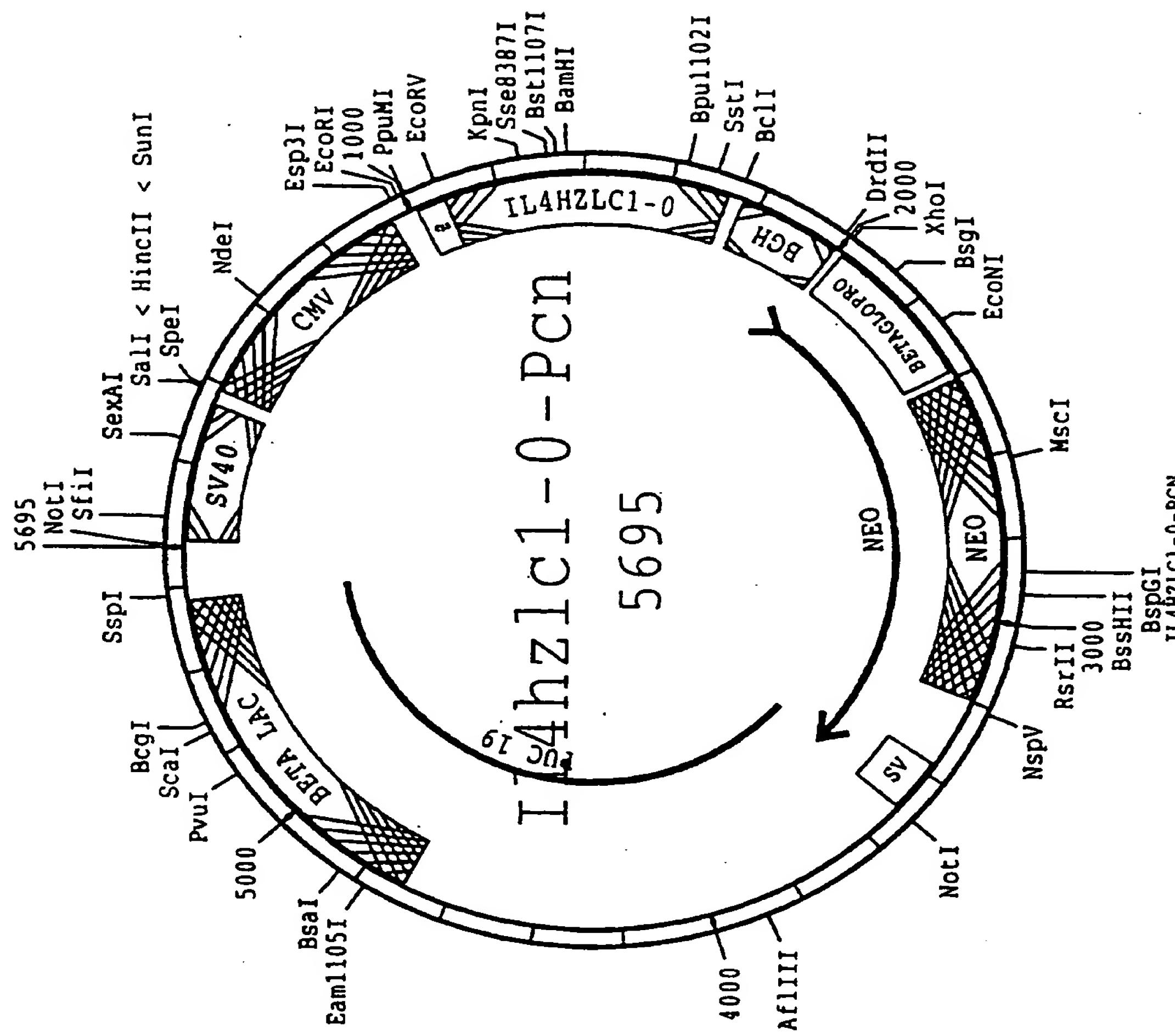
FIGURE 9



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FIGURE 10



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